

## GEOLOGY OF THE FLAT TOPS WILDERNESS AND BEAR RIVER CORRIDOR

The Flat Tops Mountains, the northern part of the White River Plateau, were formed by a combination of volcanic and glacial forces over a very long period of time.

Fifty-two million years ago, swirling magma under the earth's surface caused the area that is now the White River Plateau to begin to uplift. Eventually, the earth began to give way, resulting in ten or more mild volcanic eruptions which spread basalt over the plateau over the past twelve million years. The steam and oozing lava came up through fissures in the earth and spread across the uplift and basins, creating an erosion resistant cap, which left the Flat Tops their tabletop appearance.

What followed was an ice age, in which glaciers became the primary force molding the landscape. Glaciers in the most recent ice age melted about ten thousand years ago, and in the process of melting, the receding glaciers carved out features in the rock. Among these features are *cirques*, *arêtes*, *striations*, *moraines*, and *kettle lakes*.

When a glacier melts, friction between the receding ice and the rock beneath it changes the morphology of the land. Under the force of gravity, the mass of ice slides downhill. On the downhill side of the glacier, a hill-shaped rift called a *terminal moraine* forms. On the uphill side, the mass of the moving glacier pushing down on the earth creates a rounded steep cliff called a *cirque*. Sometimes two cirques come together, forming a sharp, narrow ridge between them, called an *arête*. *Striations*, vertical indentations in the cliff-sides, are caused by the glacier scratching against the bedrock as it moves downhill. As the glacier continues to melt, some chunks of ice melt at a slower rate than the rest. These remaining ice fragments erode depressions into the landscape, which are then filled with snowmelt or rainwater to produce *kettle lakes*.

One can imagine these glacial forces taking place in the Bear River Corridor. A large glacier once occupied the entire river valley. The Chinese Wall is a pronounced example of a cirque. The Devil's Causeway is an arête. A terminal moraine can be seen in the area around Gardner Creek. Many of the lakes in the area are kettle lakes, including Little Causeway Lake.

### Sources:

Black, Christopher R. *Interpretive Glacial History: Bear River Corridor, Garfield County Colorado*. Unpublished

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